NETEVENTS

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"INNOVATORS IN CLOUD, IOT, AI & SECURITY"

DRAFT

Leveraging the Efficiencies of Hybrid Data Centres

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Panellists:

Francois Zimmerman	EMEA Chief Technologist - Platforms and Infrastructure, Hitachi Data Systems
Galeal Zino	Founder, NetFoundry
Matthew Steiner	Cloud Management Evangelist/Strategist, VMware

Clive Longbottom

Hello everyone. I will just let the panel introduce themselves, name, rank and serial number and then we can get on with the actual panel session itself.

Matthew Steiner

It's Matthew Steiner. I'm Cloud Management Evangelist/Strategist for VMware working in Europe, Middle East and Africa.

Francois Zimmerman

Hi. I'm Francois Zimmerman. I'm the Chief Technologist for Platforms and Infrastructure for Hitachi here in EMEA.

Galeal Zino

Galeal Zino, founder of NetFoundry.

Clive Longbottom

Okay, so hybrid cloud, why bother about cloud? Well, it's something which really, I mean it is an evolution of a lot of things that were happening anyway. Things like grid computing and service oriented architectures and all those sort of things which never really caught on. But all of a sudden cloud does seem to have exploded mainly because of AWS being able to do a good job of it. But one of the things why private enterprises have begun to hook onto it is that the big secret of the IT department was beginning to become a little bit better known by the business and this was that they were paying for somewhere around about 80% to 90% of unused capability on the IT platform itself.

If you were running one application per physical server you were running somewhere around about 10% utilisation of CPU. If you were building in high availability, so you had a cluster of two it was down to 5%, a cluster of four you were down to 2.5%. Once you start to get to those levels and the main Board find out about it they sort of go ah, we need to do something here. We need to talk and a lot of that then became IT, you're actually a cost to the business and it's cheaper for us to outsource. So that didn't go down too well.

Alongside that, it was a case of well if we can use virtualisation maybe that can help and it did to a certain extent. You could virtualise and go great, now we can actually use all of these resources a little bit better. We could drive the utilisation of servers up to 30%, 40%, 50% in some cases. You could drive storage utilisation up into the 60%, 70%, 80% without the knee-jerk reaction from the storage manager who used to be a case of oh we're at 50%, we'd better order some more storage just in case.

Networks were a problem. Network bonding was around and things like that, but having this virtualisation of the networks coming through became something where people then started to look at it and go okay, so we've got all of this capability to virtualise the server, we've got the capability to virtualise the storage and we've got the growing capability to virtualisation the network itself. Wonderful, doesn't that solve all of our issues?

The trouble was that all of this being done through lots of software-defined environments all needed to be done together in that horrible word a holistic manner because if you did it all separately, you knocked over one domino and it affected the other two. So you solved all your server problems and all of a sudden it became a storage problem. You solved all your storage problems and then the server couldn't deal with all of the stuff that was coming through.

Cloud looked good because it promised all of this elasticity and then we had all of the different types of ways that you could do this. Hey, we could do it all on prem, couldn't we? Yes, except if you've got a hundred different workloads and you're going to put them all on prem you'd better have some damn good systems architects who can make sure that sharing all of those resources in an effective will actually work.

Okay, well, we can go on colo. That's exactly the same, you're still going to own all of the hardware so you're still going to have to have some damn good systems architects.

Okay, well now we've got the different types of as a service so we can go infrastructure as a service, we can go to AWS. Yeah, if you've ever tried to figure out how to use the AWS jigsaw box of all of the different pieces that need to be put together, you can see you still need some damn good systems architects.

Okay, well platform as a service because that gets rid of quite a bit of it doesn't it? Yeah, yeah, but there is very few actual platform as a service services around.

So software as a service, we can get rid of all the problem. We can just go to salesforce.com and things like that can't we? Yeah, but if you want to integrate salesforce.com into anything else, where does that integration take place unless you want to be over the salesforce.com barrel and run everything on the force one platform.

So, oh great okay, so then how on earth do you actually get this all working together anyway? Well, if we stick it all on the private cloud, okay maybe not. That was the way that a few vendors saw it all in the first place. You don't want to use public cloud, it's full of issues, all the security issues, ya, da, da, da. Stick it on the private cloud. The trouble was a lot of people were using AWS and a lot of people in the AWS camp, Google camp and increasingly the Microsoft camp were don't bother about private cloud, stick it all on the public cloud. Somewhere in the middle is where most people are going to end up.

Now, we see a lot of end user customers who say yeah, we're doing hybrid cloud. We've got some workloads which are on private, we've got some workloads which are on the public and you're going how are those two environments working together. Oh no, they're different workloads. They're completely separate. That's mixed cloud. It is not hybrid cloud.

Hybrid cloud is where you have the capability to move the workloads across as transparently as possible, which at this stage is not always completely transparently.

Then you've got hybrid IT which is a case of yeah, we actually have a mainframe as well and we want that to be part, appear part, of this whole platform. We've got some old AS400s, we've got some HP Unix, we've got all sorts of things and all of those need to be included.

So that is where we see a lot of people getting to this hybrid IT of having some single workload per physical or clustered server alongside some private cloud and alongside some public cloud.

The last slide that I've got before we go onto bringing the panel in is these are where you have to put the effort in if you are anywhere on the spectrum of the cloud. So, if you're going to do it all on prem, you've got to look after all of that lot that's in green. That's yours. As you move along you have less responsibility for some of the aspect of the platform that you're dealing with.

So coming over to you three now, surely no one in their right mind would want to be on the left-hand side of that because there you've got responsibility for everything.

That's where the 80% of IT budget gets spent on, keeping the lights on, making sure that everything is patched and everything is maintained successfully. When something goes wrong, the headless chickens have to be paid a hell of a lot to try and put it right.

When you get over to software as a service it's a case of well all that we're actually doing is we're just putting in names to say these are going to be the users and we're doing a little bit of adaptation. Somebody else is doing all of that running around. Somebody else is paying for all of that and they're charging us a known amount every month.

So why - we'll start with you Matthew - why would anybody want to bother about what's on the left-hand side?

Matthew Steiner

I will just answer that in one sentence then. There is probably several reasons why I guess enterprises are. First of all, look at why enterprises are looking at public cloud per se is usually two reasons. The first reason, perhaps cost. I sometimes challenge on cost whether public cloud is actually any lower cost than private cloud. I've seen one case where public cloud was actually fifty times more expensive than private cloud, so it depends on your workload.

So there are costs and there are governance reasons why they might not want to consider going onto public cloud.

Then we look at the reasons why they definitely want to go onto public cloud is because public cloud is more agile which brings you all the way round to why are we in this business. It comes to the application.

So I think the reason clients are needing to adopt hybrid cloud architectures for want of another word is to support the plethora or the diversity of applications that they're bringing out, or to support their business.

So they may be wanting to bring out brand new whizzy application that is consumer facing, maybe running on an iPhone or something like that. It's quite likely they're going to develop that and potentially run some of that application on public cloud.

As you mentioned before though, that application may be a banking application, may need to talk to some services that are running on a traditional mainframe.

So most of our clients or enterprise clients have got a mix of application requirements. So what we really need to do is provide the ability for them to run the workloads in the right place at the right time. In the right place at the right cost and with the right performance and manage those workloads regardless of where they're running because it's going to be a mix.

Clive Longbottom

Francois, when you're looking at the right workload in the right place at the right time at the right cost, all the rights?

Francois Zimmerman

I was thinking like a useful way of looking at this kind of mix of applications is we like to talk about four types of IT that a large enterprise will have which is IT as a liability, IT as a commodity, IT as a weapon, and then a fog and industrial IT.

If you look at IT as a liability, that's where you look at the kind of fragile applications that are yet to be re-platformed and it's not a case of moving them to the cloud. It takes often - well if you look at something like the NatWest outages a while back, when you touch an element it's a problem. So that's about rewriting the entire application from the ground up. That will take seven odd years to happen. So those sort of things will tend to consume on premise and IaaS.

If you look at IT as a commodity, that's the kind of well-behaved web native applications that all tend to, over time, consume PaaS and SaaS.

Then IT as a weapon is kind of an interesting use case because we have established use cases like in banking we have low latency trading. Clearly, people control top to bottom because they are looking for marginal gains. Then you have more modern style kind of use case today. Machine learning and memory computing, all of these things probably require specialised hardware that are just not commodity, you can't really buy them on the cloud. So that's kind of the reason why you would run that on premise or in a specialist cloud provider.

Then finally, there is kind of fog and IoT use case. So obviously Hitachi has a ton of industry verticals in this kind of industrial IT space and a lot of these machines that we're trying to gather data from I guess you wouldn't expose them directly to the Internet and also, they may generate too much sensitive data for you to expose that directly to the Internet. So what you would do then is you would have distributed on prem IT which is doing pre-filtering machine learning at the edge, possibly some machine automation at the edge and also provide security fundamentally because you're not exposing control of heavy industry to the public Internet.

So those are kind of the four things and I think that that will forever be, if you like, on prem because it's going to be cheaper and simpler than hardening all those industrial IT devices.

Clive Longbottom

Delivery is a long, long time. Galeal, when you're now looking at IT as a weapon, you're looking at the right workload at the right place at the right time, that is heavily dependent on how well the whole platform can interoperate which is heavily dependent on network capabilities. How do you see all of this happening? People who, for any reason go we're going to stay at the left-hand side of this, we're scared of the cloud, we don't have trust in the cloud security whatever it is, and then as time goes on they'll start to realise that actually this should be further over to the right and some will try to move to the right and go we shouldn't have done that. That was the wrong workload, can we move it back again? How do you see that progressing?

Galeal Zino

You would give a better answer, but I'll try anyway. Actually, I will pick up on Matthew's word of agility. I think at the end of the day with the speed and the business velocity of tomorrow's world agility and cost become the determining factors in that right to left or left to right.

Amazon is a perfect example of AWS and I think they've done an unbelievable job with AWS and EC2, NS3 et cetera. I always say though if Amazon was selling compute or selling storage, they'd be out of business. It's not really what they're selling. They're selling agility. They've built an abstraction platform that lets me very easily orchestrate that compute and that storage on demand and they did it in the cloud, which is why we see a lot of folks go cloud.

On the other hand, how long does it take for those constructs to then be represented in the private data centre? How long can it be before IT is able to use those same type of constructs, virtualisation, orchestration regardless of where the workload is? Because as that happens, then I think we do get to a paradigm of where is the best place for this workload at this moment in time. That's when we get to true hybrid cloud is when all of those environments have that type of agility.

Clive Longbottom

Francois, you were looking to dive in.

Francois Zimmerman

I kind of don't agree with this concept of mixed cloud because I think most customers we speak to have already kind of got over this should I use cloud and they are trying to use cloud as much as possible. So, if you like, on premise becomes something you use because you have to or because you can see tangible benefit and that's what I kind of mean by IT as a weapon and IT as a liability.

So if you look at something like banking customers, they have this set of regulations coming in PSD2. They have to open up their core applications for payments via open banking APIs to a bunch of fintech guys out in the cloud.

So you wouldn't take your fragile core business app and implement your PSD2 APIs directly into that. What you would do is you would create a data integration layer which goes to a separate mode 2 platform which runs out in the cloud which has a smaller attack surface which does just enough web app to be able to expose the data that you need in order to fulfil that and then you would put it behind like a web application firewall and you would do all of that stuff.

But that's a classic hybrid cloud use case. You've got no intention of ever moving your core banking applications out in the cloud, but you have got a data integration layer which spans private cloud and commodity web application to fulfil that.

Clive Longbottom

Yeah, but when you look at that, you're essentially doing it with band aids and rubber bands. It's not exactly going well. The best technical way to do this would be to actually do it a proper API level and so forth.

Francois Zimmerman

Yeah, and that's this idea of we are operating in an imperfect world. Ideally what these guys would do is start with a blank sheet of paper and optimise the entire product offering they have to all their customers and start from scratch, like the web start-ups do.

But the reality is they are operating a complex business. The web start-ups pick and choose little services to offer, individual services, which either can be much more agile whereas these guys have got a lot of fragile services which are probably not economic to transform quickly because they want to focus on getting the services out quickly that are giving them lots more money.

Clive Longbottom

This also then also starts to bring us through to - I will go over to you now Matthew - the micro services economy as well as the API economy. So rather than building the next large monolithic application, let's come out with the next great ERP that will put SAP in its basket. People are now saying well actually, ERP is the wrong concept. Let's come up with a set of micro services that we can pull together on the fly to create the composite application that responds to the businesses' needs which needs flexibility of process. That then means okay, so I'm going to be bringing this one in from AWS, I'm going to be bringing this one in from Azure, this one from IBM Soft Layer and I need to pull them all together at the same time which requires a good level of orchestration and technical contract discussion as you're going along. How do you see that happening?

Matthew Steiner

I think what you described describes very well what clients are doing in terms of architecting their new applications. They are architecting new applications out of micro services, out of containers et cetera.

I'm just going to come briefly back to the hybrid cloud. We can have long circular conversations about are clients going to go hybrid cloud, hybrid not. I think that probably reflects the complexity of client environments because yes, people are wanting to deconstruct their applications into micro services. But if you've got SAP, you're not going to deconstruct your SAP overnight. You're just not going to do it. You're kind of wedded almost to that technology.

So I see these things going two ways. This is what our strategy is at least and hopefully it will reflect what people want to do is we look at the public cloud. It's got all it's benefits, it's agile, it's developer friendly, it's API friendly. But it's not as robust and it doesn't carry the same capabilities of a private cloud around security necessarily, around governance, around data sovereignty and stuff like that.

Then we look at the weaknesses of the private cloud which doesn't have the same agility, it's not API-driven, it's very hard to develop on. What we're seeking to do at least is give the customers the choice and actually make the private cloud have those public cloud characteristics, have it being automated, have it being very agile and also make the public cloud have some more of the characteristics of the private cloud with respect to governance, security, et cetera. That will actually deliver on the promise of running the application which ultimately the job in hand is to run the application that services the user, run that application in the right place based on the criteria the client decides, and that's the policy piece.

Clive Longbottom

Okay, well I would like to open up to the crowd as well for any ideas. Have you got any questions? If not, I will just have to ask some more.

Francois Zimmerman

I was actually just going to make a comment. Matthew and I had an interesting discussion over breakfast this morning. When people speak about private versus public, they often think about security and in practice what we were discussing is we are not aware of any hacks that have happened at the platform level either public or private. The hacks tend to happen at the application level.

So I guess we're in consensus that we think that that's a little bit of a red herring where what you are trying to do in order to ensure security is that you have effective gateways and effective software rules to govern data flows. That really has nothing to do with the platform or the ware. So you can then, if you like, on premise consume these hardware acceleration services, FPGA, all of those exotic technologies that are kind of fragile. As long as you have the application governance in place, it's safe.

Matthew Steiner

One could argue that the public clouds are actually more secure because they're all built to certain security standards whereas having consulted with a wide variety of clients, some clients are more secure than others. I can see examples where some clients would be a lot easier to hack than others, even if it is down to the very basics of badge security. Some places are a lot easier to get into and pretend to be one of the employees. Not that I would do that. I kind of just walked into offices before and that's not as secure as Amazon's data centre.

Clive Longbottom

If you look at Microsoft in terms of full department of a couple of hundred people who are dedicated to technical security, has another department that's dedicated to physical security. Now, I've been into lots of private datacentres and it's a case of we've got a CISO and he is seen as getting in the way so the rest of the business works around that CISO. That's not allowed in cloud data centres or even in colo data centres where it's a case of security comes first.

We know that if we get it wrong, we're going to be the headline on the register or we're going to be the headline on the Daily Express or the Financial Times. It puts us out of business. So they cannot afford to get it wrong and they can afford to pay the money for those security people to go and work for them. Private people, it's a case of well, if we do pay we're paying the complete whack whereas if we're paying via a public cloud environment, we're paying a hundredth, a thousandth, a ten-thousandth of that person's time because it is shared across the whole user base.

That security we see is stronger in the public domain environments for the cloud, but it's still a case of if you stick an insecure docker container on top of the platform that you've got on that public environment, you might as well stick it on your own environment. It's still going to be insecure. So it does come down to making sure that you get the coding right, you get the whole approach to the application correct otherwise it doesn't make any difference how secure the platform itself is.

Audience Q&A

Oliver Schonschek, Insider Research

Oliver Schonschek from Germany. For me, cloud, hybrid cloud, has the same awareness problem as security in total. I will just give you an example. In the general data GDPR, the meaning of the data location is just you can go wherever you are in the European Union. But for Germany, for example, most companies really want to have a datacentre in Germany. From the privacy perspective it makes no sense. It can be wherever it is out of privacy reasons. But nevertheless, the people have the feeling that it should be somehow in Germany.

So, as you know, a lot of providers from the United States now open up data centres in Germany. Even if they have some in Ireland, they go to Germany because of the German customers thinking Germany is better, a better place to store data.

So to have a flexible hybrid cloud model and really to have also the programming and the network really flexible the user has to understand what are the principles behind it. What are the regulations and how do policies help me? For example, of course, there are data - I am coming to the end - but there are datasets who have to remain, for example, in Germany in special regulated industries. But not every private data has to stay in Germany, but people think it should.

Clive Longbottom

People are chasing a [shiner] here when it comes to data security anyway, when it comes to GDPR and it's got to be in country. The Internet does not work if you don't have data caching. Even if it's a case of we're actually storing the data in Germany, it's going to have millions of copies on network switchers, in CDNS you name it all over the place.

Francois Zimmerman

I kind of do agree that data locality matters and mainly it's not actually for security. It's to escape subpoenas from governments that have got more let's say things like Patriot Act and all that sort of thing. So it's Germany and Switzerland are a good example where locality because your customers have an expectation that they don't want a foreign power to be able to subpoena the data and that's why we see all these weird firewalls.

So I think that's kind of important. I think people aren't doing that because they're afraid of an external source. They're afraid of a government actually subpoenaing the data and them being liable to a SOX prosecution or something like that.

This is what worries me a little bit about when we were talking earlier around if you do get a data breach are you really going to disclose to the government because now that we can see that the penalties are so high, I think we're going to get into the same kind of protective thing where people are saying I'm not going to disclose that because it's not really anything of interest.

Clive Longbottom

Disclosure is going to become a legal necessity anyway so you can't hide it for longer than a few days to a week.

Francois Zimmerman

I think ideally what there would be is it will be I've lost X, Y and Z data. But in terms of handing over all the logs so that for example a government agency could go and do a back trace and do like the actual aggressive take down, I don't think that's going to happen. I think that's not in companies' interests and I think that's exactly what we've seen in Germany and Switzerland and all of those places.

Matthew Steiner

It's an interesting point though because most of us in vendor land work for big American companies and most big American companies assume that everything is in America. But when you come into Europe, we've just got a completely different market and we're going to see slightly modified hybrid cloud models in our markets because Amazon don't have data centres in every one of those geos. To your point, people are going to want, if it is just for emotional reasons, are going to want their data in those data centres.

I was in Spain last week and we were talking about hybrid cloud et cetera and they were saying yeah, but Amazon don't have a datacentre in our geo so that option is not available to us. Great. So what you probably need is a partner such as VMware who has got four thousand network cloud partners all over the country. A little plug there. I will not do any more I promise.

Clive Longbottom

Okay, well, on that point of a quick bit of advertising, if there is one last quick question.

Jan Guldentops, BA Test Labs

Jan Guldentops. I was wondering there have been some academic research. You just stated that there haven't been breaches of the underlying virtualisation infrastructure in data centres. But there is a lot of academic research that has pretty good demos. [Row Hammering, VM Installation]. I know Kyle Irvine has something developed, Gold Flip, Feng Shu. I had to look it up because I couldn't remember the name. Have you really haven't seen those kind of exploits?

Francois Zimmerman

Not in the world.

Matthew Steiner

I'm aware of those sort of exploits in the academic world, but not in the commercial world.

Francois Zimmerman

Not in the world.

Matthew Steiner

I don't have it in front of me the full security what you said there, but I do know that our security team are very quick at patching these things when they come out and actually do come out from the academic world. The point being I don't believe that we've had any commercial breaches of that sort.

Francois Zimmerman

Because it's pretty dangerous stuff. If one VM can read out the memory of another VM, umm.

Clive Longbottom

But it's a built in problem with docker at the moment that you can raise privilege in docker.

Francois Zimmerman

No, it's a built in problem in the hardware basically.

Matthew Steiner

Again, I think if you start to look at the public cloud answer to that actually, is quite interesting. These breaches occur and it's generally down to old code, unpatched code et cetera. The good news for clients who are using technology in the public cloud is it is more likely that they're going to be running on a platform is up-to-date. So, for example, the B2B cloud on Amazon is going to be run by VMware and our engineers will be keeping the code up-to-date so the clients don't have to which is one of the great advantages.

Clive Longbottom

All right, well we've run out of time. I've been given the hook. If you would like to thank my panel, thank you very much.

Manek Dubash

Thanks very much Clive and thanks to the panel. Interesting discussion. I expect we will have that one again and again.

[end]